

What is Claimed is:

- SUB
A2 →
1. A connection protector kit for use with an electrical stub connection, said kit comprising:
- a) a flexible cap having first and second opposed ends and an interior wall defining a cavity, said first end being closed and an opening being formed in said second end and communicating with said cavity;
 - b) a gel disposed in said cavity; and
 - c) wherein said cavity and said gel are adapted to receive the stub connection.
2. The kit of Claim 1 including means for retaining said cap on the connection.
3. The kit of Claim 2 wherein said means for retaining is operative to maintain said cap in a compressed position.
4. The kit of Claim 2 wherein said means for retaining includes a pin.
5. The kit of Claim 4 wherein said pin includes a shaft and a plurality of barbs extending outwardly from said shaft.
6. The kit of Claim 4 including wherein said cap includes a pair of opposed holes adapted to receive said pin therethrough.
7. The kit of Claim 4 wherein said pin is connected to said cap by an integrally molded bridge member.
8. The kit of Claim 4 wherein said cap is formed of a frangible thermoplastic elastomer.
9. The kit of Claim 2 wherein said means for retaining includes a clamp.

A2
Can1

10. The kit of Claim 9 wherein said clamp includes at least one inwardly extending locating projection.

11. The kit of Claim 10 wherein said cap includes an inwardly extending channel adapted to receive said inwardly extending locating projection.

12. The kit of Claim 9 wherein said clamp includes first and second opposed, inwardly extending locating projections.

13. The kit of Claim 12 wherein said cap includes first and second opposed, inwardly extending corrugations adapted to receive said first and second locating projections.

14. The kit of Claim 9 wherein said clamp includes first and second opposed walls and a connecting portion joining said first and second walls, said connecting portion and said first and second walls defining a cavity to receive said cap, said gel and the connection.

15. The kit of Claim 9 wherein said clamp includes first and second opposed walls and a living hinge joining said first and second walls, said living hinge and said first and second walls defining a cavity to receive said cap.

16. The kit of Claim 9 wherein said clamp includes first and second opposed walls and first and second latching structures on said first and second walls, respectively, said first and second latching structures adapted to secure said clamp in a closed position about said cap, said gel and the connection.

17. The kit of Claim 9 including a flexible tie wrap to secure said clamp in a closed position about said cap, said gel and the connection.

18. The kit of Claim 17 wherein said clamp includes first and second opposed walls and first and second passages defined in said first and second walls, respectively, said first and second passages adapted to receive said tie wrap.

AZ
Cont

19. The kit of Claim 9 wherein said clamp includes separable first and second members and each of said first and second members has first and second latch structures on either end thereof, said first and second latch structures of said first member being interlockable with said first and second latch structures of said second member to secure said first and second members together and about said cap, said gel and the connection.

20. The kit of Claim 9 wherein said cap includes an outwardly extending positioning projection and said clamp has a locating hole defined therein and adapted to receive said positioning projection.

21. The kit of Claim 1 wherein said cap includes a plurality of expandable corrugations.

22. The kit of Claim 1 wherein said cap is formed of a material having a flexural modulus of between about 5,000 and 100,000 psi and a durometer of between about 40 Shore A and 90 Shore D.

23. The kit of Claim 1 wherein said gel has a Voland hardness of between about 5 and 30 grams force, an elongation of at least 100%, a stress relaxation of no more than 50%, and a tack of greater than about 6 grams.

24. A protected electrical connection assembly comprising:

- a) a flexible cap defining an opening and having an interior wall defining a cavity, said cavity communicating with said opening;
- b) a stub connection including a pair of elongated, electrically conductive elements joined at respective terminal ends thereof, said conductive elements defining a crotch therebetween and extending through said opening, said terminal ends and at least a portion of each of said conductive elements being disposed in said cavity of said cap;
- c) a gel disposed in said cavity and interposed between said stub connection and said interior wall of said cap; and
- d) means for retaining said cap on said connection.

AZ
Cont

25. The assembly of Claim 24 wherein said gel is elongated and elastically deformed and applies an outward force against said connection and said interior wall.

26. The assembly of Claim 25 wherein at least a portion of said gel is elongated at least 50%.

27. The assembly of Claim 25 wherein said cap is compressed.

28. The assembly of Claim 27 wherein said cap is maintained in compression by said means for retaining.

29. The assembly of Claim 24 wherein said means for retaining includes a pin extending through said cap and said crotch.

30. The assembly of Claim 24 wherein said means for retaining includes a clamp.

31. The assembly of Claim 30 wherein said clamp includes at least one inwardly extending locating projection.

32. The assembly of Claim 24 wherein said cap includes a plurality of expandable corrugations.

33. A protected electrical connection assembly comprising:

- a) a compressed, flexible cap having a closed first end and a second end opposite said first end, said cap including:
 - an interior wall defining a cavity;
 - an opening formed in said second end and communicating with said cavity;
 - a pair of opposed holes formed in said cap between said first and second ends;
- b) a stub connection including a pair of elongated, electrically conductive elements joined at respective terminal ends thereof, said conductive elements defining a crotch therebetween and extending through

A2
(cont)

said opening, said terminal ends and at least a portion of each of said conductive elements being disposed in said cavity of said cap;

c) a gel disposed in said cavity and interposed between said stub connection and said interior wall of said cap, wherein said gel is elongated and elastically deformed and applies an outward force against said connection and said interior wall, at least a portion of said gel being elongated at least 50%; and

d) a pin extending through said holes in said cap and said crotch to retain said cap on said connection and to maintain said cap in compression;

e) wherein substantially all exposed, electrically conductive portions of said connection are substantially completely immersed in said gel.

34. A protected electrical connection assembly comprising:

a) a compressed, flexible cap having a closed first end and a second end opposite said first end, said cap including:

an interior wall defining a cavity;

an opening formed in said second end and communicating with said cavity; and

first and second opposed, inwardly extending corrugations;

b) a stub connection including a pair of elongated, electrically conductive elements joined at respective terminal ends thereof, said conductive elements defining a crotch therebetween and extending through said opening, said terminal ends and at least a portion of each of said conductive elements being disposed in said cavity of said cap;

c) a gel disposed in said cavity and interposed between said stub connection and said interior wall of said cap, wherein said gel is elongated and elastically deformed and applies an outward force against said connection and said interior wall, at least a portion of said gel being elongated at least 50%; and

d) a clamp retaining said cap on said connection and maintaining said cap in compression, said clamp including:

first and second opposed walls; and

first and second opposed locating projections extending inwardly from said first and second opposed walls, said first and

A2
Cont

second locating projections disposed in said first and second opposed inwardly extending corrugations, respectively, and adjacent said crotch;

e) wherein substantially all exposed, electrically conductive portions of said connection are substantially completely immersed in said gel.

35. A connection protector kit for use with an electrical stub connection, said kit comprising:

- a) a flexible cap having first and second opposed ends and an interior wall defining a cavity, said first end being closed and an opening being formed in said second end and communicating with said cavity; and
- b) a clamp to retain said cap on the connection;
- c) wherein said cavity is adapted to receive the stub connection.

36. The kit of Claim 35 wherein said clamp includes at least one inwardly extending locating projection.

37. The kit of Claim 36 wherein said cap includes an inwardly extending channel adapted to receive said inwardly extending locating projection.

38. A protected electrical connection assembly comprising:

- a) a flexible cap defining an opening and having an interior wall defining a cavity, said cavity communicating with said opening;
- b) a stub connection including a pair of elongated, electrically conductive elements joined at respective terminal ends thereof, said conductive elements defining a crotch therebetween and extending through said opening, said terminal ends and at least a portion of each of said conductive elements being disposed in said cavity of said cap; and
- c) a clamp retaining said cap on said connection.

39. The assembly of Claim 38 wherein said clamp includes at least one inwardly extending locating projection and said cap includes an inwardly extending channel receiving said inwardly extending projection.

A2
Cont

40. A method for protecting an electrical stub connection, said method comprising the steps of:

placing a cap and a gel over the stub connection such that the stub connection is received in a cavity of the cap and the gel is interposed between the stub connection and an interior wall of the cap;
deforming and elongating the gel about the stub connection;
maintaining the gel in the elongated state such that the gel exerts an outward force on each of the stub connection and the interior wall of the cap.

41. The method of Claim 40 wherein said step of deforming and elongating the gel includes the steps of placing the gel in the cavity and thereafter inserting the stub connection into the gel such that the gel is displaced by the stub connection and thereby elongated.

42. The method of Claim 40 wherein said step of deforming and elongating the gel includes the steps of placing the gel in the cavity and thereafter compressing the cap such that the gel is displaced and thereby elongated.

43. The method of Claim 40 wherein said step of deforming and elongating the gel includes elongating at least a portion of the gel by at least 50%.

44. The method of Claim 40 including the step of inserting a pin through the cap and a crotch of the stub connection.

45. The method of Claim 44 wherein the step of inserting a pin includes bending an integrally molded bridge member connecting the cap and the pin to allow the pin to be inserted in a selected location.

46. The method of Claim 40 including the step of securing a clamp about the cap.

47. The method of Claim 40 including the step of expanding the cap to accommodate the stub connection.

AZ
Cont

48. The method of Claim 47 wherein said step of expanding includes the step of expanding corrugations in the cap.

49. A method for protecting an electrical stub connection, said method comprising the steps of:

providing a cap having a cavity and a gel disposed in the cavity;
inserting the stub connection into the cavity and the gel such that the stub connection displaces and thereby deforms and elongates the gel;
compressing the cap to further displace and thereby deform and elongate the gel; and

inserting a pin through the cap and a crotch of the stub connection to retain the cap on the stub connection and to maintain the gel in the elongated state such that the gel exerts an outward force on each of the stub connection and the interior wall of the cap.

50. A method for protecting an electrical stub connection, said method comprising the steps of:

providing a cap having a cavity and a gel disposed in the cavity;
inserting the stub connection into the cavity and the gel such that the stub connection displaces and thereby deforms and elongates the gel;
compressing the cap to further displace and thereby deform and elongate the gel; and

securing a clamp about the cap to retain the cap on the stub connection and to maintain the gel in the elongated state such that the gel exerts an outward force on each of the stub connection and the interior wall of the cap.

51. The method of Claim 50 wherein said step of securing a clamp includes inserting a locating projection of the clamp into a crotch of the stub connection.